The results in localization were much as in the first case. The number of errors was remarkably small, being for 100 trials 2 per cent. when the fixation point was 1 m., 3 per cent. when it was 2 m., 5 per cent. when it was 3 m., 18 per cent. when it was 4 m., and 39 per cent. when it was 5 m., and the left eye representing a distinctness of $\frac{6}{12}$ to $\frac{6}{6}$ for the right eye. With the ratio of $\frac{6}{6}$ for the right and $\frac{1}{36}$ for the left eye, and the distance of the fixation point 1 m. the errors were 3 per cent., and 20 per cent. when the distance of the fixation point was 2 m. The distinctness of vision, therefore, according to Dr. Greeff, has very little to do, within moderate limits, with the perception of relative distances.

Columbia College. J. H. HYSLOP.

HERING, *Prüfung der sogennannten Farbendreiecke mit Hülfe des Farbensinnes excentrischer Netzhautstellen*, Archiv. f. d. ges. Physiologie 1890 XLVIII 417.

At the time of the publication of Hess's study of the peripheral color sense Hering based upon it a critique of the Young-Helmholz theory (both papers reviewed in this JOURNAL, III, 203, 204). The present paper is a continuation of that critique with particular reference to the color-triangle of König and incidentally to those of Maxwell and Fick. Hering finds one and all of them and indeed all possible color-triangles made upon the Young-Helmholz theory out of harmony with the facts established by Hess. The discussion is technical and for it the reader is referred to the original. In the latter part of the paper he also shows the irreconcilable opposition between the observed brightness of colors seen with the periphery of the retina and the three-color theory, citing in part the results of a study of that subject, also by Hess, presently to be published. The reply of Fick to his former paper, reviewed in the JOURNAL, III, 574, reached him to late for special rejoinder, but he considers its points answered in the present paper, and counts upon Fick as a convert when he shall have investigated the matter by Hess's method.

E. C. SANFORD.

KLOBUKOW, *Vorlesungsversuch zur Demonstration der Wirkung von Complementärfarben und Farbengemischen beim Zusammenbringen von gelösten Farbstoffen*, Ann. d. Physik u. Chemie 1891 XLIII 438.

In explaining the effects of mixing colors to a large audience it is very desirable to have direct mixtures and not those produced by the color-discs. It is proposed to have colored solutions of the desired shades so prepared that they are not soluble in and cannot take color from one another but have a great difference of specific gravity. Two solutions are shaken together in such quantities that the desired color is produced. The mixture is than allowed to stand a short time, at the end of which the two component colors are found separated one above the other. For example, to show the effects of a mixture of red and green a solution of aldehydegreen in amylalcohol and one of cobalt-salts in water are used. If the proper strengths are employed the mixture is a dirty white. The addition of common salt to the cobalt solution hastens the separation of the two. For mixtures of blue and yellow a solution of phenanthrenchinon or some other derivative of chinon that is insoluble in water but soluble in amylalcohol and an ammoniacal solution of copper in water are to be used. The mixture is a bright green and serves to show that mixtures of pigment colors are different from those of spectral colors. Likewise a solution of chinon in amylalcohol and a combination of the solutions of cobalt and copper in water (as near as possible to the violet of the spectrum) will give a dirty white when mixed in the proper proportions, whereas the corresponding spectral colors are not complementary.

E. W. SCRIPTURE.